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Chris Haslego
President
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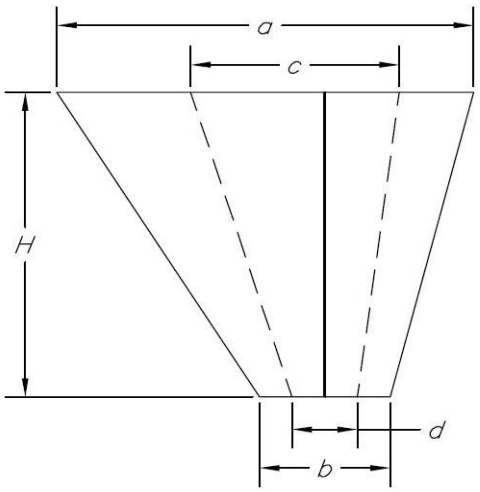
Content Based
Chemical Engineering

MAP - Stress & Deflection - Trapezoidal Plate, with Stiffeners

SERVICE:

---------- **Plate** ----------

Long Parallel Side : in. (a)
Short Parallel Side : in. (b)
Distance Between Parallel Sides : in. (H)
$a - \left(\frac{a-b}{3}\right)$: in. (L)
Ratio of H/L :
Ratio of H/L : Factor, α
Ratio of H/L : Factor, β
Plate Thickness : in.
Corrosion Allowance : in.
Actual Thickness : in. (t)
Allowable Stress : psi (S)



---------- **Panel** ----------

Long Parallel Panel Side : in. (c)
Short Parallel Panel Side : in. (d)
Distance Between Parallel Sides : in. (H)
$c - \left(\frac{c-d}{3}\right)$: in. (w)
Section Modulus of Stiffeners : $in.^3$ (Z)

---------- **MAP Calculation** ----------

$$MAP := \left(\frac{Z}{0.0642\,w \cdot H^2}\right) \cdot S =$$ psi

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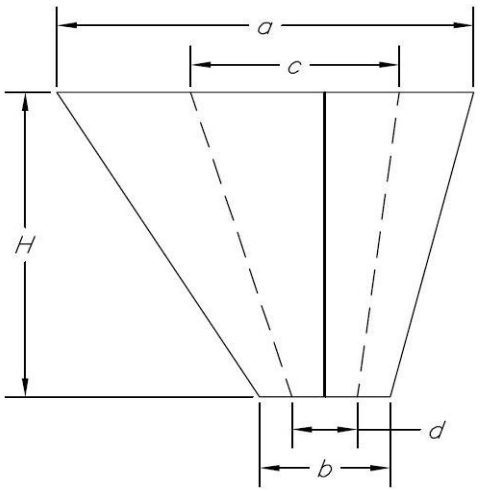
MAP - Stress & Deflection - Trapezoidal Plate, with Stiffeners

SERVICE:

---------- **Plate** ----------

Long Parallel Side :		mm (a)
Short Parallel Side :		mm (b)
Distance Between Parallel Sides :		mm (H)
$a-\left(\frac{a-b}{3}\right)$:		mm (L)
Ratio of H/L :		
Ratio of H/L :		Factor, α
Ratio of H/L :		Factor, β
Plate Thickness :		mm
Corrosion Allowance :		mm
Actual Thickness :		mm (t)
Allowable Stress :		kPa (S)



---------- **Panel** ----------

Long Parallel Panel Side :		mm (c)
Short Parallel Panel Side :		mm (d)
Distance Between Parallel Sides :		mm (H)
$c-\left(\frac{c-d}{3}\right)$:		mm (w)
Section Modulus of Stiffeners :		mm^3 (Z)

---------- **MAP Calculation** ----------

$$MAP := \left(\frac{Z}{0.0642\,w\cdot H^2}\right)\cdot S =$$ kPa

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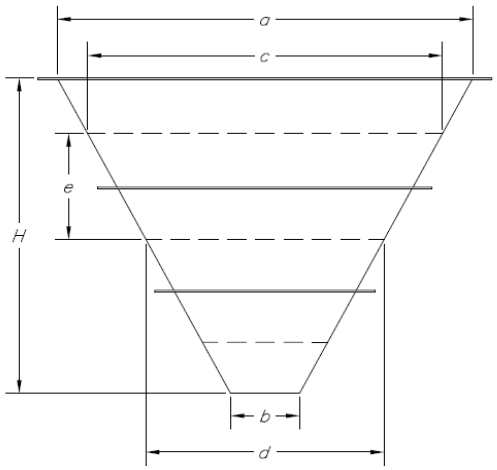
MAP - Stress & Deflection - Trapezoidal Plate, with Stiffeners

SERVICE:

---------- **Plate** ----------

Long Parallel Side : in. (a)
Short Parallel Side : in. (b)
Distance Between Parallel Sides : in. (H)
$a - \left(\frac{a-b}{3}\right)$: in. (L)
Ratio of H/L :
Ratio of H/L : Factor, α
Ratio of H/L : Factor, β
Plate Thickness : in.
Corrosion Allowance : in.
Actual Thickness : in. (t)
Allowable Stress : psi (S)



---------- **Panel** ----------

Long Parallel Panel Side : in. (c)
Short Parallel Panel Side : in. (d)
Distance Between Parallel Sides : in. (e)
$c - \left(\frac{c-d}{3}\right)$: in. (w)
Section Modulus of Stiffeners : $in.^3$ (Z)

---------- **MAP Calculation** ----------

$$MAP := \left(\frac{Z}{0.0642\,w \cdot H^2}\right) \cdot S =$$ psi

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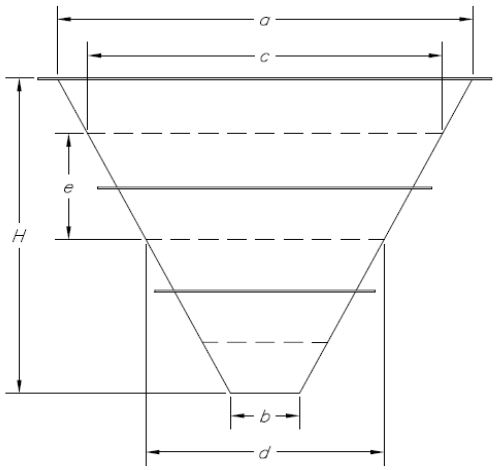
MAP - Stress & Deflection - Trapezoidal Plate, with Stiffeners

SERVICE:

---------- **Plate** ----------

Long Parallel Side :		mm (a)
Short Parallel Side :		mm (b)
Distance Between Parallel Sides :		mm (H)
$a-\left(\frac{a-b}{3}\right)$:		mm(L)
Ratio of H/L :		
Ratio of H/L :		Factor, α
Ratio of H/L :		Factor, β
Plate Thickness :		mm
Corrosion Allowance :		mm
Actual Thickness :		mm (t)
Allowable Stress :		kPa (S)



---------- **Panel** ----------

Long Parallel Panel Side :		mm (c)
Short Parallel Panel Side :		mm (d)
Distance Between Parallel Sides :		mm (e)
$c-\left(\frac{c-d}{3}\right)$:		mm (w)
Section Modulus of Stiffeners :		mm^3 (Z)

---------- **MAP Calculation** ----------

$$MAP := \left(\frac{Z}{0.0642\,w\cdot H^2}\right)\cdot S =$$ kPa

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MAP - Stress & Deflection - Trapezoidal Plate, full edge support

BASIS : This program is for internal and external pressure on a Trapezoidal Plate. Options allow calculation for the top, side and bottom plates of a vessel. The MAV calculation subtracts the dead load of the plate (W/A) from the top segment.

NOTE : Always begin a new case by retrieving the original file. Direct entry of data in cells that originally contain table lookups could cause functions to be lost and/or incorrect calculations. Cells that require data entry are colored **RED**; calculated values are black.

REFERENCES :

1) *A method for designing rectangular storage tanks.* - Kanti K. Mahajan
Chemical Engineering - March 28, 1977

2) *Pressure Vessel Handbook - 11th Edition*

3) *Manual of Steel Construction - Allowable Stress Design - A.I.S.C. 9th Edition*

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